



AstaReal®: Premium Quality Astaxanthin

 **AstaReal**
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by Melissa Kvidahl

It's no secret that consumers are forever chasing the fountain of youth. And whether their goal is to feel young or look young (or both), shoppers are increasingly turning to the natural products industry for solutions that perform from the inside out.



The thriving cosmeceuticals industry, for example, shows no signs of slowing. According to a new report by Research and Markets, the global cosmeceuticals market is projected to grow at a CAGR of 8.62 percent from 2014 through 2019. Just last year, The Freedonia Group hailed cosmeceuticals as the fastest growing segment of the cosmetics market, demonstrating consistent growth over the past 10 years; the group also estimated that U.S. demand would hit \$8.5 billion in 2015. The average consumer? A woman over age 35 with a disposable income.

Within this booming market, skin care is taking the lead, according to a 2013 report by RNCOS Business Consultancy Services, which revealed that by 2016, 62 percent of the cosmeceutical market will consist of skin care products.

When it comes to beauty from within supplements, the outlook is equally encouraging, especially for brands that can back their efficacy claims with research. Perhaps surprisingly, beauty supplements are finding the most favor not with the aging population, but rather with younger shoppers ages 18 to 34 years. A global survey conducted in 2013 by Datamonitor Consumer reported these consumers were the most trusting of supplements in this sector; in fact, 41 percent of these younger respondents found beauty claims to be somewhat or completely trustworthy. The market research firm also concluded products that can clearly communicate scientific findings and ingredients on the label will find the most success with this group.

But youthfulness isn't just about looks; it's also about physical fitness. Consumer interest in this area is

reflected in the massive growth of the sports nutrition market, which has expanded to appeal to consumers of all ages and abilities, from weekend warriors to Baby Boomers, amateur athletes to marathoners, and everyone in between.

According to a report from Global Industry Analysts, the global market for sports and fitness nutrition supplements is expected to reach \$6.17 billion by 2018, and it's not just the widening audience at work. Manufacturers are also "investing substantially in research to develop novel products that can carry a natural claim," said the report's authors. This means natural products shoppers can finally see a place for themselves in a sports nutrition market that has arguably been marred by adulteration and occupied by extreme athletes.

Natural astaxanthin, an antioxidant derived from the microalgae *Haematococcus pluvialis*, has been shown to meet both beauty and fitness trends by reducing wrinkles and improving muscle endurance during workouts. But the truth is that all astaxanthin is not created equal.

Low prices are enticing to buyers, but the result can be disastrous if the final products are low quality, or worse—adulterated. Compounding this risk is today's media climate, in which the supplement industry is under the microscope. The New York Attorney General's recent probe into botanical supplements is just one example of the misguided mainstream belief that supplements are an unregulated industry not to be trusted. That's why the onus is on manufacturers to offer the best possible products, starting with the highest quality ingredients.

“Purchasing a cheaper astaxanthin alternative has major risks in this industry,” said Janice Brown, technical sales/support at AstaReal, Inc. “There are risks to the consumers who are relying on premium ingredients that have sufficient safety data, and then there are risks to the companies that are putting the products out on the shelves.”

“Low-cost astaxanthin usually means that it is not produced to high standards, and not enough resources are put into researching the safety and efficacy of the product,” she added. “Purchasing on price alone, without regard to quality and branding, is a terrible idea for the future of the company seeking an astaxanthin supplier. One has to ask whether the good reputation of their company is really worth tarnishing by purchasing cheap ingredients?”

Indeed, responsible manufacturers are wise to value the higher price point of quality ingredients as a worthwhile investment in their brand. In return for their investment, manufacturers can rest easy knowing they’ve offered consumers a product that delivers on results and exceeds safety expectations.

“Formulators should do plenty of research on the product or ingredient they are considering,” Brown said. “A reliable ingredient would be one with sufficient safety studies.” Along with those studies, formulators should also be able to provide proof of successful NDI and GRAS statuses with FDA notification, which are attained when the manufacturer or distributor can demonstrate to FDA, via numerous studies, a reasonable expectation of safety.

“Indeed GRAS and NDI statuses are important,” Brown said, “but it’s equally important that they are attained through FDA, and not simply self-affirmed. As far as GRAS is concerned, the latter doesn’t require the amount of safety studies as the former, and most certainly does not go through the same amount of scrutiny,” she said.

“Naturally, the companies with branded ingredients that are legitimized by peer-reviewed scientific research and bolstered by intellectual property will have higher priced ingredients than those that put little to no resources into safety

or efficacy studies,” said Joe Kuncewitch, national sales manager at AstaReal, Inc. “The slight cost offset of these value-added effects is well worth the initial investment in the long run. And the peace of mind you’ll have knowing that your finished product only contains the highest quality ingredients is priceless.”

Perhaps the first indicator of quality is the efficacy and purity of the ingredient. And this begins with production.

Some of the more commonly used astaxanthin production methods include solvent extractions as well as solvent-assisted CO₂ extractions. “The shortcomings are obvious in that the ultimate end product will have residual solvents that may have potential health risks,” Brown said. Companies using CO₂ extraction assisted with solvents opt for this method because their product potency is low and “the added solvents help them squeeze more product per extraction,” she added.

A Quality Investment

AstaReal® astaxanthin is a high-quality astaxanthin that has attained both NDI and GRAS statuses, is supported by numerous safety studies and clinical research, and is manufactured using a proprietary production system to ensure potency and quality.

AstaReal® is produced using a solvent-free, CO₂ extraction method that ensures the final product is of the highest potency and free of residual solvents. Further, by cultivating the astaxanthin from microalgae *Haematococcus pluvialis* within an indoor photobioreactor system, Fuji Chemical, owner of AstaReal, Inc., is able to control the cultivation process and prevent any environmental contaminants that may be found in open systems. “Through this cultivation process, we are able to consistently produce high-quality, highly stable, natural astaxanthin,” Brown said, adding that this process also produces substantial yields of astaxanthin content. “Other companies have ancillary components such as chlorophyll derivatives in their product, resulting in a lower yield of pure astaxanthin content and reduced long term stability.”

In 2014, the company opened AstaReal Technologies, a state-of-the-art algae cultivation facility



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in Moses Lake, Washington. The facility cultivates *Haematococcus pluvialis* algae, which is then CO₂-extracted to produce its 10-percent astaxanthin oleoresin, AstaReal® L10.

“This is the first facility of its kind in North America to cultivate commercial-scale algae biomass under these high performance conditions,” Kuncewitch said. “And now we can proudly say AstaReal® L10 is 100-percent made in the USA.”

In order to ensure reliable astaxanthin content, Fuji Chemical developed a high performance liquid chromatography (HPLC) assay. First, the samples are freed from fatty acids through enzymatic de-esterification; this step is crucial because, without it, it is difficult to accurately quantify astaxanthin molecules because they link to fatty acids. “This testing method is included in the monograph of astaxanthin in the USP [U.S. Pharmacopeia] FCC Codex,” Brown said. “Not only was the testing method developed by Fuji, but the standards for which the monograph was developed are solely based on the AstaReal® unique brand of natural astaxanthin.”

Yet another indicator of quality is the investment made by ingredient formulators in safety. The clinical database for AstaReal® includes 50 human studies (including 24 double blind, placebo-controlled trials), with more than 1,500 subjects undergoing treatments ranging from two weeks to six months. These trials examined the safety and tolerance of AstaReal® in different doses, treatment periods, and demographics ranging from age and gender to ethnicity. All of these studies confirm that AstaReal® revealed “no observed adverse effect level” (NOAEL), based on hematological, serum chemistry, urine analysis and self-report questionnaires. One such study, a double blind, controlled study conducted in 2010, enlisted 15 healthy adults to ingest 45 mg of AstaReal® daily (nearly four times higher than FDA’s allowed amount of 12 mg/d) for four weeks.¹ The study revealed NOAEL on all standard examination parameters.

Beyond safety, AstaReal® has also been shown in extensive clinical studies to have beneficial effects on health and well-being, particularly in the key categories of anti-aging and physical fitness.

AstaReal® for Anti-Aging

When it comes to anti-aging efforts, the most common approach is to diminish the visible signs of aging like wrinkles, age spots or freckles. AstaReal® astaxanthin has been shown in recent studies to reduce visible signs of UV-aging through both topical and dietary supplement applications within four to six weeks.

One such study, performed on hairless mice, revealed astaxanthin’s ability to suppress the formation of UVB photo-induced wrinkles when applied topically after sun exposure.² In this case, UVB treatment was followed by a topical application of 350 µM astaxanthin and, after just five weeks, the appearance of new wrinkles was visibly reduced. The same anti-wrinkle properties were observed in a preliminary human study on females using a topical cream containing AstaReal®.³ After two weeks of use, a dermatological assessment revealed significant wrinkle reduction as well as a reduction in lower eye and cheek puffiness. An additional test performed within this study also showed the ingredient’s ability to improve overall skin moisture after three weeks of topical use.

But a topical application isn’t for everyone. That’s why dietary supplement manufacturers are increasingly offering beauty from within products. When it comes to astaxanthin, two human clinical trials demonstrate AstaReal®’s ability to improve visible signs of aging and general skin health as part of a supplement plan.

The first, a double blind, placebo-controlled study, showed AstaReal® in combination with tocotrienol can improve several aspects of overall skin condition.⁴ Female subjects (mean age 40 years) with dry skin received daily doses of 2 mg astaxanthin and 40 mg natural tocotrienols. By the fourth week of treatment, subjects demonstrated increased moisture levels, consistent natural oils, and a reduction in fine wrinkles and pimples.

The second study used isolated AstaReal®, supplementing female subjects (mean age 47 years) with 4 mg or placebo.⁵ After six weeks, all of the women in the treatment group reported in a questionnaire that they felt their skin condition had improved



significantly. Analysis confirmed these findings, showing that the treated group indeed achieve positive results in hydration and elasticity; dermatological exams showed they also had fewer wrinkles.

How? Wrinkles and other visible signs of aging are a result of UV rays permeating the skin's dermis—which contains collagen, elastin, and other fibers that support smooth structure—and inducing the production of *in situ* radical oxygen species (ROS) and matrix metalloproteinases (MMP), which destroy the collagen matrix. While the skin can repair itself to some extent by rebuilding this collagen damage, repeated exposure to uncontrolled levels of ROS and MMP can result in wrinkles. Astaxanthin tempers the effects of reactive oxygen and MMP and, therefore, supports the regeneration of skin.

Fitness Findings

There's a reason people say you're as young as you feel. Most healthy young adults move, walk and exercise with an ease that tends to diminish naturally with age. The key to preserving this vitality is in maintaining a physical fitness plan throughout life. And when it comes to fitness, astaxanthin has been proven to increase endurance, reduce muscle damage and improve lipid metabolism.

As it pertains to muscle endurance, astaxanthin is able to protect the skeletal muscle from the increased damage of oxidative stress generated by physical activity, and also modify muscle metabolism via its antioxidant effect. The result is an improvement in muscle function during exercise.

In one randomized double blind, placebo-controlled study, healthy men supplementing with 4 mg AstaReal® daily experienced an increase in the number of knee bends (squats) they were able to perform after just three months; by six months, a significant improvement was observed over the placebo group.⁶ Another study performed on mice revealed that AstaReal® may modify muscle metabolism and result in improved muscle performance as well as weight loss.⁷ In fact, after four weeks of supplementation, the mice's running time to exhaustion had significantly improved to the tune of 20 percent. When applied to long-distance runners, as it

was in another study, a daily dose of 6 mg of AstaReal® resulted in a lower accumulation of lactic acid, an indicator of oxygen efficiency during exercise.⁸

Indeed, with the right investment in a quality branded product like AstaReal®, manufacturers can offer consumers a pathway to lasting vitality and wellness ... and maybe even a sip from that fountain of youth.

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